



TAOS

Command-Line Interface Guide

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About This Guide

What is in this guide

This guide shows you how to use the True Access™ Operating System (TAOS) command-line interface. It describes how to enter commands to modify profiles and parameters, and provides useful tips on command-line shortcuts. It also shows how to display status information at the command-line interface.

This guide assumes that you have already installed the TAOS unit and connected a workstation to the controller's serial port. If you have not already finished those tasks, please see the unit's hardware installation guide.



Note: This manual describes the full set of features for TAOS units running TAOS software version 8.0.2 or later. Some features might not be available with earlier versions or specialty loads of the software.



Warning: Before installing your TAOS unit, be sure to read the safety instructions in the *Access Networks Safety and Compliance Guide*. For information specific to your unit, see the “Safety-Related Electrical, Physical, and Environmental Information” appendix in your unit's hardware installation guide.




What you should know

This guide is intended for the person who will configure and maintain the TAOS unit. To use it effectively, you must have a basic understanding of your unit's security and configuration, and be familiar with authentication servers and networking concepts.

Documentation conventions

Following are all the special characters and typographical conventions used in this manual:

Convention	Meaning
Monospace text	Represents text that appears on your computer's screen, or that could appear on your computer's screen.
Boldface monospace text	Represents characters that you enter exactly as shown (unless the characters are also in <i>italics</i> —see <i>Italics</i> , below). If you could enter the characters but are not specifically instructed to, they do not appear in boldface.

Convention	Meaning
<i>Italics</i>	Represent variable information. Do not enter the words themselves in the command. Enter the information they represent. In ordinary text, italics are used for titles of publications, for some terms that would otherwise be in quotation marks, and to show emphasis.
[]	Square brackets indicate an optional argument you might add to a command. To include such an argument, type only the information inside the brackets. Do not type the brackets unless they appear in bold type.
	Separates command choices that are mutually exclusive.
>	Points to the next level in the path to a parameter or menu item. The item that follows the angle bracket is one of the options that appears when you select the item that precedes the angle bracket.
Key1-Key2	Represents a combination keystroke. To enter a combination keystroke, press the first key and hold it down while you press one or more other keys. Release all the keys at the same time. (For example, Ctrl-H means hold down the Control key and press the H key.)
Press Enter	Means press the Enter, or Return, key or its equivalent on your computer.
Note:	Introduces important additional information.
 Caution:	Warns that a failure to follow the recommended procedure could result in loss of data or damage to equipment.
 Warning:	Warns that a failure to take appropriate safety precautions could result in physical injury.
 Warning:	Warns of danger of electric shock.

Getting Started

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Command-line shortcuts	1-3

The login process determines which commands are available to you. You can easily list the commands, or get help for a specific command. When you become familiar with the interface, you can use command-line shortcuts to substantially lower the number of keystrokes you have to enter.

Logging in

The first step in accessing the command line is to log in to the system. When the TAOS unit is configured, you can log in from an ANSI-compatible terminal connected to the unit's serial port, or you can log in over the network by means of Telnet. When you log in, you are prompted for a username:

User :

If you are logging in to a new system for the first time, enter the default username (Admin) and the default password (Ascend).

If an administrator has already created a User profile for you and given you the name and password required to use it, you can log in by supplying that information. In addition to specifying a name and password, a User profile sets permissions that determine which classes of commands you can use. Alternatively, you might be able to log in as the Admin user, with full permissions. (For more information about permissions and command classes, see the next section.)

Typically, the name specified in your User profile appears as your system prompt. For example, if you log in as Admin, the following prompt appears:

admin>

Getting Started

What commands are available?

This guide assumes that you have the permissions required to perform all of the tasks described. Most of the examples show the Admin login prompt, but the actual prompt on your screen could represent any login with comparable permissions. For example:

```
User: joann
Password: joann-password

joann>
```

You can display the name of the current User profile by entering the Whoami command:

```
admin> whoami
admin
```

What commands are available?

To display the commands that your User profile makes available, enter the Help (or ?) command. The following example shows the commands available for the Admin login. The left column shows command names, and the right column shows the command *class*, which determines the permissions required to use the command. To list all commands, even if you do not have the required permissions, append the `-a` argument to the Help command.

```
admin> ?
?                ( user )
arptable         ( system )
auth             ( user )
clear            ( user )
clock-source     ( diagnostic )
clr-history      ( system )
connection       ( system )
date             ( update )
debug            ( diagnostic )
delete           ( update )
device           ( diagnostic )
dir              ( system )
dircode          ( system )
ether-display    ( diagnostic )
fatal-history    ( system )
format           ( code )
fsck             ( code )
get              ( system )
help             ( user )
if-admin         ( diagnostic )
[More? <ret>=next entry, <sp>=next page, <^C>=abort]
```

The last line in the sample output shows your options for displaying additional output:

- Press Return to display one more line of output.
- Press the Space key to display another page (22 lines) of output. If the status window is open, the Space key displays another 5 lines of output.
- Press Ctrl-C to cancel any further output from the Help (?) command.

If you are not sure of the name of a command, type the first few letters of the command to generate a precise list. For example:

```
admin> ? de
debug                ( diagnostic )
delete               ( update )
device               ( diagnostic )
```

Table 1-1 lists the command classes and associated permissions in a User profile.

Table 1-1. Command classes and User profile permissions

Command class	Permission
System	allow-system = yes
Diagnostic	allow-diagnostic = yes
Update	allow-update = yes
Code	allow-code = yes

Note: An individual command line is limited to 80 characters (including the prompt).

Getting help for a specific command

If you include a command name after the Help (or ?) command, the system displays a usage statement for the command name you specify. For example, to get information about the Dir command:

```
admin> ? dir
dir                list all profile types
dir profile-type   list all profiles of the specified type
dir profile-type profile-index list the specified profile instance
```

Also, online help for a command that requires arguments appears if you enter the command without the arguments.

For more information about the Dir command, see Chapter 2, “Working with Profiles.”

Command-line shortcuts

To save keystrokes and time, you can use abbreviations, edit existing command lines, and reuse previously entered commands.

Using abbreviations

When you enter a command, you can type just enough characters to specify a unique string. The TAOS unit fills in the rest of the name automatically.

For example, the following two commands are equivalent, as shown by their output:

```
admin> iproute
usage:
iproute add    <destination/size> <gateway> [ pref ] [ metric ]
iproute delete <destination/size> [gateway]

admin> ipr
usage:
iproute add    <destination/size> <gateway> [ pref ] [ metric ]
iproute delete <destination/size> [gateway]
```

The same principle applies when you specify a profile name. For example:

```
admin> dir ip
```

results in an error message, because the string is not unique. But the following command:

```
admin> dir ip-route
```

displays information about IP-Route profiles. For example:

```
21 12/20/1999 00:13:09 default
```

This principle applies to any command argument (except profile indexes, which must be specified fully). For example, the following two commands are equivalent:

```
admin> load boot-sr net host1 srb.bin
admin> load b n host1 srb.bin
```

Editing a command line

Table 1-2 lists commands you can use to correct typing mistakes in a command line or to reuse and modify previous commands. If you cannot use an arrow key for a command that requires one, use the equivalent VT100 escape sequence.

Table 1-2. Control sequences for editing command lines

Control Sequence	Effect
Ctrl-H, Backspace, or Delete	Erase the previous character.
Ctrl-D	Erase the current character.
Ctrl-W	Erase the previous (space-delimited) word.
Ctrl-U	Erase the entire line.
Ctrl-K	Erase the rest of the line, starting with the cursor position.
Ctrl-C	Echo ^C, terminate the input, and return ^C character input.

Table 1-2. Control sequences for editing command lines (continued)

Control Sequence	Effect
Ctrl-P or Up Arrow	Replace the line with the previous line from the command history buffer. Twenty previous lines are kept.
Ctrl-N or Down Arrow	Select the next line. This sequence is valid only if Ctrl-P or Up Arrow has been used to select a previous line.
Ctrl-B or Left Arrow	Back up the cursor without deleting a character. If you then type regular characters, they are inserted in the line.
Ctrl-F or Right Arrow	Move the cursor to the right, unless at the end of a line.
Ctrl-A	Go to the beginning of the line.

Reusing commands (command history)

The command history buffer is a file containing the last 20 command lines. Once the buffer is full, it discards the oldest command line when you press Enter to execute a command, and adds the new command to the buffer.

To redisplay a command line, press Up Arrow or Ctrl-P until the command reappears on the screen. You can then re-execute the command by pressing Enter. To edit the command first, see “Editing a command line” on page 1-4.

For example, you might type the following command and press Enter:

```
admin> read ip-interface {{1 1 1}0}
```

Then, if you press the Up Arrow key, the command line reappears:

```
admin> read ip-interface {{1 1 1}0}
```

The cursor is at the end of the line. If you want to replace the 1 in the interface address with a 2, for example, press the Left Arrow key until the cursor is at the right edge of the 1, then press Delete, and then press the 2 key:

```
admin> read ip-interface {{1 2 1}0}
```

Press Enter to execute the new command. The cursor can be positioned anywhere within the command line when you press Enter.

Using command-line shortcuts to save time

Chapter 2, “Working with Profiles,” describes how to work with profiles and set TAOS configuration parameters. It also provides an example of how to combine command-line shortcuts to see the range of possible values for a parameter and set the parameter quickly and efficiently. (For the example, see “Combining command-line shortcuts to set parameters” on page 2-17.)

Working with Profiles

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Commands for working with profiles

A profile is a group of configuration parameters related to a particular purpose. For example, Chapter 1, “Getting Started” introduced User profiles. You can set parameters in a User profile to define a user’s access to the TAOS unit.

Recall that there is more than one User profile. Each User profile must therefore have an *index* to distinguish it from other profiles of the same type. You can work on only one profile at a time. Before you can modify a profile, you must make it the *working* profile by reading the profile into the system’s edit buffer. Within a profile, you might want to navigate through multiple levels of nested subprofiles, referred to as *contexts*. You can also create new profiles, but not new types of profiles.

Some commands for working with profiles operate at a directory level, displaying information about any profile in the system. Other commands operate only on the working profile. Table 2-1 lists TAOS commands related to working at the directory level with profiles.

Table 2-1. Directory-level commands

Command	Purpose
Dir	Displays a directory listing of profiles.
Delete	Deletes a profile.
Get	Displays the contents of any profile or subprofile without reading the profile into the edit buffer.
New	Creates a new default instance of a specified profile type and makes it the working profile.
Read	Reads a profile into the edit buffer, where it can be modified. Reading a profile makes it the working profile.

Table 2-2 lists TAOS commands that operate only on the working profile.

Table 2-2. Commands related to the working profile

Command	Purpose
List	Lists the contents of the current context (nested level) in the working profile.
Set	Sets the value of a parameter in the working profile.
Write	Writes the contents of the edit buffer to flash memory.

Profile listings displayed by using the List or Get command include a line that specifies the name of the profile and your current location within it. The system displays the message on the first line of a profile, subprofile, or array listing. For example, the following line identifies a Connection profile. Because there can be multiple Connection profiles, the display includes the profile's index (in this case, john):

```
[in CONNECTION/john]
```

If you move to a subprofile, the message also includes the name of the subprofile. For example:

```
[in CONNECTION/john:ip-options]
```

When you create a profile by using the New command, the List message indicates that the profile is new. For example:

```
admin> new connection john
CONNECTION/john read

admin> list
[in CONNECTION/john (new)]
station* = john
active = no
encapsulation-protocol = mpp
called-number-type = national
dial-number = ""
sub-address = ""
clid = ""
ip-options = { yes yes 0.0.0.0/0 0.0.0.0/0 1 60 120 no no 0 0.0.0.0 +
ipx-options = { no router-peer both both no 00:00:00:00 00:00:00:00 "" +
bridging-options = { 0 no }
session-options = { "" "" no no 120 no-idle 120 "" 0 disabled autobaud+
telco-options = { ans-and-orig no off 1 no no 56k-restricted 0 "" "" +
ppp-options = { no-ppp-auth none "" "" "" "" stac 1524 no 600 600 no +
mp-options = { 1 1 2 no no }
mpp-options = { "" quadratic transmit 1 1 15 5 10 70 }
fr-options = { "" pvc 16 "" transparent-link no "" 16 "" }
tcp-clear-options = { "" 0 "" 0 "" 0 "" 0 no "" 256 20 }
ara-options = { "" 0 }
v120-options = { 7 3 1500 30000 256 }
answer-options = { }
x75-options = { 7 10 1000 1024 }
appletalk-options = { no "" 0 0 router-peer }
```

```
usrRad-options = { global 0.0.0.0 1646 "" 1 acct-base-10 }
calledNumber = ""
shared-prof = no
framed-only = no
tunnel-options = { disabled atmp-protocol 0 rip-off "" "" 5150 "" "" +
vrouter = ""
atm-options = { aal5-llc 0 32 no "" none 1 { no { undefined "" { +
AT-string = ""
```

Note: A plus sign at the end of a line indicates that more settings are contained in the subprofile or array than could be displayed on one line.

If you use a Set command to change a profile, the message also indicates that the current profile has been changed. For example:

```
admin> set active = yes
admin> list ip-options
[in CONNECTION/john:ip-options (new) (changed)]
...
```

If a Set command changes the profile's index, the message shows the new profile name at the next List command. For example:

```
admin> set station = test
admin> list
[in CONNECTION/test]
...
```

If there is already a saved profile that uses the new index, the TAOS unit displays a warning of a possible overwrite. For example:

```
admin> new connection
CONNECTION/" " read
admin> set station = test
(New index value; saving will overwrite CONNECTION/test.)
admin>
```

If you make a series of changes to a profile, the last of which causes the profile to match a saved profile that has the same index, the next List command message no longer indicates that the profile contents have changed.

Profile types and indexes

The TAOS unit supports different types of profiles. For example, a Connection profile contains parameters related to a WAN connection, and an Ethernet profile contains parameters related to an Ethernet interface. To display a list of the profile types on your system, use the Dir command:

```
admin> dir
ADMIN-STATE-PERM-IF  SNMP Permanent Interface Admin State
ADMIN-STATE-PHYS-IF  SNMP Physical Interface Admin State
ALARM                Alarm Profile
ATM-CONFIG           Bandwidth allocation for slots for ATM platforms
ATM-QOS              ATM Quality of Service (QoS) Parameters
ATMPVC-STAT          ATM PVC State
ATMVCC-STAT          ATM VCC State
BANDWIDTH-STATS      Bandwidth statistics for slots for ATM platforms
BASE                 System version and enabled features
CALL-INFO            Active call information
CALL-LOGGING         Call logging
CONNECTION            Connection (WAN) profiles
DEVICE-STATE          Device Operational State
DEVICE-SUMMARY        Device availability summary information
ERROR                Fatal Error log
ETHER-INFO            Ethernet Interfaces Information
ETHERNET              Ethernet Interfaces Configuration
EXTERNAL-AUTH         External authentication info
IP-GLOBAL             Global TCP/IP parameters
IP-INTERFACE          IP interfaces
IP-ROUTE              Static IP routes
LAN-MODEM             LAN Modem Disable State
LIM-SPARING-CONFIG    Line Interface Module (LIM) Sparing Configuration
LIM-SPARING-STATUS    Line Interface Module (LIM) Sparing Status
LOAD-SELECT           Code images to load
LOG                   System event logging configuration
RADIUS-STATS          RADIUS statistics
SERIAL                Serial interfaces
SLOT-INFO             Slot Info profile
SLOT-STATE            Slot Operational State
SLOT-TYPE             Slot Type profile
SNMP                  SNMP configuration
SYSTEM                System-wide basic parameters
TERMINAL-SERVER        Terminal server parameters
TIMEDATE              Current system date and time
TRAP                  SNMP trap destinations
TRUNK-DAUGHTER-DEV    Trunk daughter card device status
USER                  Administrative user accounts
```

When you use the Dir command, the left column of the output shows a list of profile types in the system, and the right column describes the purpose of each profile type. In many cases, there is more than one profile of a given type. Each profile of the same type must have a unique index, which can be a name or an address within the system.

To list all profiles of a given type, specify the profile type on the command line. For example, to list the two User profiles that ship with the system:

```
admin> dir user
    9  12/07/1999 12:49:24  default
   33  12/08/1999 14:20:28  admin
```

In the output, the leftmost column shows how many bytes of flash memory are used to store the profile. The second and third columns show the date and time the profile was last modified. The rightmost column shows the profile's index (in this case, a name).

Profiles related to sessions, routes, and logins

Profiles related to sessions, routes, and logins are created by the administrator, and the administrator deletes them when they are no longer needed. The maximum number of such profiles is limited only by flash memory. The administrator assigns names to index these profiles, which include the following types (shown as displayed by the help system):

CONNECTION	Connection (WAN) profiles
IP-ROUTE	Static IP routes
USER	Administrative user accounts

To display or create one of the profiles, you must specify its index on the command line. For example:

```
admin> get user default
[in USER/default]
name* = default
password = ""
active-enabled = yes
allow-termserv = no
allow-system = no
allow-diagnostic = no
allow-update = no
allow-password = no
allow-code = no
idle-logout = 0
prompt = *
default-status = no
top-status = general-info
bottom-status = log-window
left-status = connection-list
screen-length = 24
status-length = 18
use-scroll-regions = no
log-display-level = none
```

When you list a User profile's contents, the asterisk next to the Name parameter indicates that the name specification is the profile's index.

Systemwide profiles

Profiles related to the configuration of the unit itself, or to routing within the system, are present when the unit ships. These profiles do not require an index because only one instance of the profile can exist. Systemwide profiles include the following (shown as displayed by the help system):

EXTERNAL-AUTH	External authentication info
IP-GLOBAL	Global TCP/IP parameters
SNMP	SNMP configuration
SYSTEM	System-wide basic parameters
TERMINAL-SERVER	Terminal server parameters

To display the contents of one of these profiles, you simply specify the profile type on the command line. For example:

```
admin> get snmp
[ in SNMP ]
enabled = no
read-community = *****
read-write-community = *****
enforce-address-security = no
read-access-hosts = [ 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 ]
write-access-hosts = [ 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 ]
contact = ""
location = ""
queue-depth = 0
```

Profiles for configuring physical devices

Profiles related to configuring physical devices are created by the system when it first detects the presence of a particular card. These profiles are indexed by their physical address within the system. Each type of card or built-in port has a related profile type. For example:

ETHERNET	Ethernet Interfaces Configuration
SERIAL	Serial interfaces
T1	DS1 line parameters

For example, suppose you install an eight-port T1 card in slot 13 of the TAOS unit. The system creates the following profiles:

```
admin> dir t1
155 12/11/1999 15:50:31 { shelf-1 slot-13 2 } ""
152 12/07/1999 12:49:36 { shelf-1 slot-13 3 } ""
152 12/07/1999 12:49:36 { shelf-1 slot-13 4 } ""
152 12/07/1999 12:49:36 { shelf-1 slot-13 5 } ""
152 12/07/1999 12:49:36 { shelf-1 slot-13 6 } ""
152 12/07/1999 12:49:36 { shelf-1 slot-13 7 } ""
152 12/07/1999 12:49:36 { shelf-1 slot-13 8 } ""
320 12/08/1999 19:48:58 { shelf-1 slot-13 1 } ""
```

Each device in the TAOS unit has a physical address composed of its shelf number, slot number, and item number.

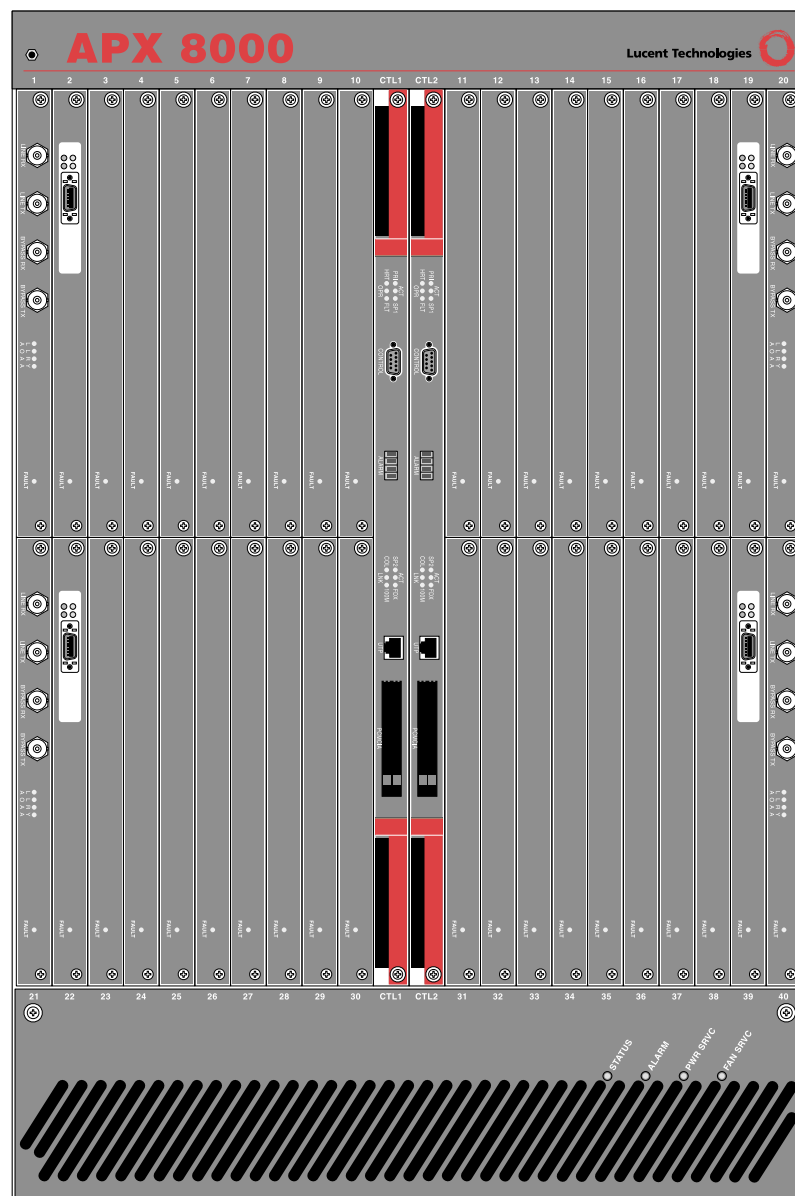
Physical addressing on an APX 8000 unit

On an APX 8000™ unit, a physical address can have one of the following formats:

```
{ shelf-1 slot-N item-N }  
{ shelf-1 left-controller item-N }  
{ shelf-1 right-controller item-N }
```

As shown in Figure 2-1, the 40 slots on the front panel of an APX 8000 shelf are numbered sequentially left to right, from top to bottom.

Figure 2-1. Front panel of an APX 8000 shelf



The shelf number is always 1. Expansion slots are numbered from 1 to 40, starting with the expansion slot on the top left corner. The left controller is in slot 41, and the right controller is in slot 42. For example, the first slot has the following address:

```
{ 1 1 0 }
```

Each shelf controller can be referred to in one of the following ways:

- 41 or 42
- left-controller or right-controller
- left or right

The following addresses are equivalent and all refer to the left controller:

- { 1 left-controller 0 }
- { 1 left 0 }
- { 1 41 0 }

The item number addresses a particular port or item on the specified slot card. An item number of 0 (zero) denotes the whole slot. Items start with number 1 for the leftmost item on the card.

When you list a T1 profile's contents, the asterisk next to the Physical-Address parameter indicates that the physical address is the profile's index. For example:

```
admin> get t1 {1 13 2}
[in T1/{ shelf-1 slot-13 2 }]
physical-address* = { shelf-1 slot-13 2 }
line-interface = {no d4 ami eligible middle-priority inband +
```

To read a T1 profile, you must specify its address as the profile index. For example:

```
admin> read t1 {1 1 3}
T1/{ shelf-1 slot-1 3 } read
```

The T1 card faceplate numbers the lines from 0 to 7. However, the profile indexes number the lines from 1 to 8.

Note: For call routing purposes, an address can contain a zero for the shelf, slot, or item number. In a Call-Route address specification, a zero always means *any*.

Physical addressing on a MAX TNT or DSLTNT unit

Each device in a MAX TNT® or DSLTNT™ unit has a physical address composed of its shelf number, slot number, and item number, in the following format:

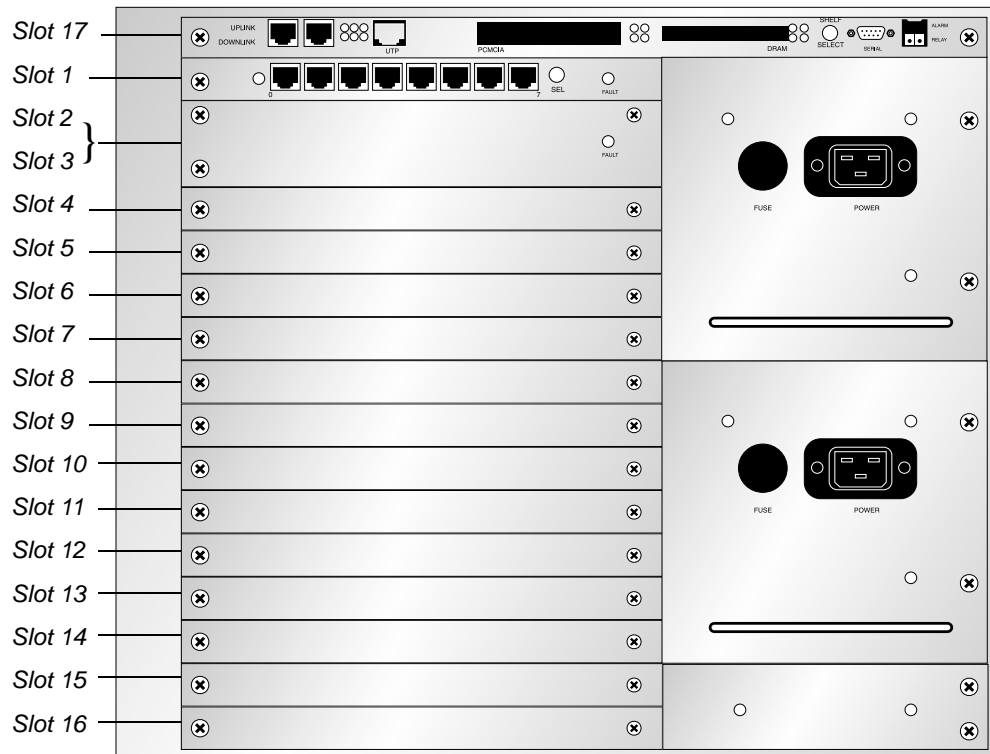
```
{ shelf-N slot-N item-N }
```

For a standalone system, the shelf number is always 1. In multishelf systems, the shelf number is from 1 to 9.

Note: For call-routing purposes, an address can contain a zero for the shelf, slot, or item number. In a Call-Route address specification, a zero always means *any*.

Figure 2-2 shows how the slots are numbered on the back panel of a standalone shelf.

Figure 2-2. Back panel of a MAX TNT or DSLTNT shelf



The shelf controller at the top of the shelf is always assigned slot number 17. The shelf controller can also be referred to as controller or c. For example, the following addresses are equivalent and all refer to the shelf controller:

```
{ 1 controller 0 }
{ 1 c 0 }
{ 1 17 0 }
```

Expansion slots are numbered from 1 to 16, starting with the top expansion slot just below the shelf controller. For example, the first slot on shelf 1 has the following address:

```
{ 1 1 0 }
```

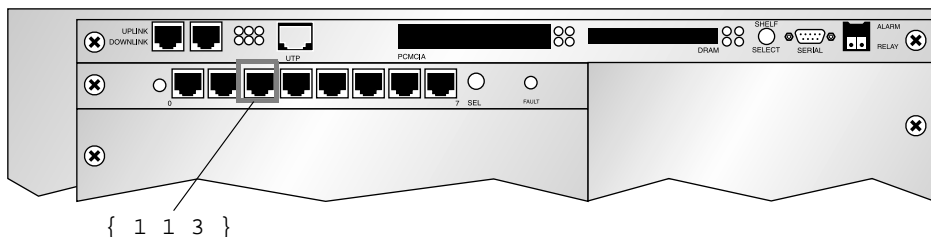
A modem card that uses two slots (such as the card in slots 2 and 3 in Figure 2-2) is always addressed by the first of the two slot numbers. Accordingly, a digital modem card in the second and third slots would have the following address:

```
{ 1 2 0 }
```

The item number addresses a particular port or item on the specified slot card. An item number of 0 (zero) denotes the whole slot.

Items start with number 1 for the leftmost item on the card. For example, Figure 2-3 shows the address of the third T1 line on a T1 card in slot 1 on shelf 1.

Figure 2-3. Address of an individual T1 line



Note: The T1 card faceplate numbers the lines from 0 to 7. However, the profile indexes number the lines from 1 to 8.

To read a T1 profile, you must specify its address as the profile index. For example:

```
admin> read t1 {1 1 3}
T1/{ shelf-1 slot-1 3 } read
```

Physical addressing on a Stinger unit

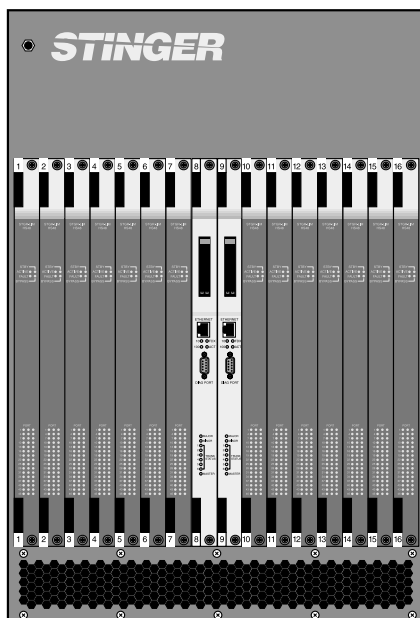
Each device in the Stinger™ unit has a physical address composed of its shelf number, slot number, and item number in the following format:

```
{ shelf-N slot-N item-N }
```

The shelf number is always 1.

Figure 2-4 shows the modules on the front panel.

Figure 2-4. Front panel of a Stinger unit



The Line Interface Modules (LIMs) are numbered 1–7 and 10–16, starting with the leftmost slot. For example, the first LIM has the following address:

```
{ 1 1 0 }
```

The Control Modules (CMs) reside in slots 8 and 9. For example, the CM in slot 8 has the following address:

```
{ 1 8 0 }
```

The Trunk Modules (TMs) reside in the middle two slots of the rear of the unit, directly behind the CMs. TMs slots are numbered 17 and 18. For example, the TM in slot 18 has the following address:

```
{ 1 18 0 }
```

The item number addresses a particular port or item on the specified module. An item number of 0 (zero) denotes the whole module.

To read an SDSL profile, you must specify its address as the profile index. For example:

```
admin> read sds1 {1 1 3}
SDSL/{ shelf-1 slot-1 3 } read
```

Profiles for configuring a local IP interface

When the system first detects the presence of an Ethernet port, it creates a default profile for configuring an IP interface on that Ethernet port. You can also create new IP-Interface profiles with unique logical-item numbers, and you can delete them when they are no longer needed.

Note: Although you can delete IP-Interface profiles, you should never delete the default IP-Interface profile created by the system. If you do, none of the other IP-Interface profiles created for that interface will work.

IP-Interface profiles are indexed by an interface address within the TAOS unit.

IP-Interface profiles on an APX 8000 unit

To list the IP-Interface profiles on your system, enter **dir ip-interface**. For example:

```
admin> dir ip-interface
 6 12/15/1999 00:47:28 { { any-shelf any-slot 0 } 0 }
 8 12/15/1999 00:47:28 { { shelf-1 right-controller 1 } 0 }
22 12/28/1999 16:17:23 { { shelf-1 slot-8 1 } 0 }
21 12/22/1999 16:21:58 { { shelf-1 left-controller 1 } 0 }
```

An interface address is composed of a physical address and a logical-item number, in one of the following formats:

```
{ { shelf-1 slot-N item-N } logical-item-N }
{ { shelf-1 left-controller item-N } logical-item-N }
{ { shelf-1 right-controller item-N } logical-item-N }
```

The logical-item number addresses a specific logical interface. The number is 0 (zero) for the default IP-Interface profile created by the system. If you configure additional logical interfaces, the logical-item number of the profile index does not necessarily have to be contiguous, but it must be unique.

To access an IP-Interface profile, you must specify its full interface address, as in the following example:

```
admin> read ip-interface { { 1 4 1 } 0 }  
IP-INTERFACE/{ { shelf-1 slot-4 1 } 0 } read
```

When you list the profile's contents, you will see an asterisk next to the Interface-Address parameter, indicating that the interface address is the profile's index:

```
admin> list  
[in IP-INTERFACE/{ { shelf-1 slot-4 1 } 0 }]  
interface-address* = { { shelf-1 slot-4 1 } 0 }  
ip-address = 0.0.0.0/0  
proxy-mode = Off  
rip-mode = routing-off  
directed-broadcast-allowed = yes  
vrouter = ""
```

Note: The logical-item address syntax explained in this section also applies to individual items on a line or port. For example, the syntax applies to the individual channels of a T1 line. However, for a T1 channel, the address syntax is not used as a profile index, but only as a way to address the channel in a Call-Route profile.

IP-Interface profiles on a MAX TNT, DSLTNT, or Stinger unit

To list the IP-Interface profiles on your system, enter **dir ip-interface**. For example:

```
admin> dir ip-interface  
8 12/14/1999 16:22:15 { { shelf-1 slot-4 1 } 0 }  
8 12/14/1999 16:22:15 { { shelf-1 slot-4 2 } 0 }  
8 12/14/1999 16:22:15 { { shelf-1 slot-4 3 } 0 }  
8 12/14/1999 16:22:15 { { shelf-1 slot-4 4 } 0 }  
19 12/14/1999 16:26:45 { { shelf-1 controller 1 } 0 }
```

An interface address is composed of a physical address and a logical-item number, in the following format:

```
{ { shelf-N slot-N item-N } logical-item-N }
```

The logical-item number addresses a specific logical interface. The number is 0 (zero) for the default IP-Interface profile created by the system. If you configure additional logical interfaces, the logical-item number of the profile index does not necessarily have to be contiguous, but it must be unique.

To access an IP-Interface profile, you must specify its full interface address. For example:

```
admin> read ip-int { { 1 4 1 } 0 }  
IP-INTERFACE/{ { shelf-1 slot-4 1 } 0 } read
```

When you list the profile's contents, you will see an asterisk next to the Interface-Address parameter, indicating that this is the profile's index:

```
admin> list
[in IP-INTERFACE/{ { shelf-1 slot-4 1 } 0 }]
interface-address* = { { shelf-1 slot-4 1 } 0 }
ip-address = 0.0.0.0/0
proxy-mode = Off
rip-mode = routing-off
route-filter = ""
rip2-use-multicast = yes
ospf = { no 0.0.0.0 normal 10 40 5 simple ***** 0 1 16777215 type-1 +
multicast-allowed = no
multicast-rate-limit = 100
multicast-group-leave-delay = 0
directed-broadcast-allowed = yes
vrouter = ""
```

Note: The logical-item address syntax explained in this section also applies to individual items on a line or port. For example, the syntax applies to the individual channels of a T1 line. However, for a T1 channel, the address syntax is not used as a profile index, but only as a way to address the channel in a Call-Route profile.

Profiles for routing calls to a device or item

Call-Route profiles have a unique type of index, which specifies not only a channel or modem address but also an entry number in the call-routing database. The additional number is required because each WAN channel or host port (such as a modem or HDLC channel) can have multiple Call-Route profiles addressing it.

The system has one default Call-Route profile that prevents it from dropping calls. In addition, when the system detects the presence of a host slot card (such as a modem or HDLC card), it creates a default Call-Route profile for routing calls to that slot. You can also create any number of Call-Route profiles, and you can delete them when they are no longer needed. Call-Route profile indexes use the following format:

```
{ { { shelf-1 slot-N item-N } logical-item-N } entry-N }
```

The entry number is zero unless you create additional profiles for the specified address. To display the list of Call-Route profiles, enter the Dir command as in the following example:

```
admin> dir call-route
   9  12/07/1999 15:58:08 { { { any-shelf any-slot 0 } 0 } 0 }
  13  12/07/1999 15:58:20 { { { shelf-1 slot-2 0 } 0 } 0 }
  13  12/07/1999 15:58:21 { { { shelf-1 slot-6 0 } 0 } 0 }
  19  12/07/1999 20:57:07 { { { shelf-1 slot-3 0 } 0 } 0 }
```

To access a Call-Route profile, you must specify its full index. For example:

```
admin> read call-route { { { 1 3 0 } 0 } 0 }
CALL-ROUTE/{ { { shelf-1 slot-3 0 } 0 } 0 } read
```

When you list the profile's contents, you will see an asterisk next to the index parameter:

```
admin> list
[in CALL-ROUTE/{ { { shelf-1 slot-3 0 } 0 } 0 }]
index* = { { { shelf-1 slot-3 0 } 0 } 0 }
trunk-group = 0
phone-number = ""
preferred-source = { { shelf-1 slot-2 3 } 0 }
call-route-type = any-call-type
```

Modifying the working profile

This section explains how to modify an existing profile by setting its parameter values and writing the changes to flash memory. For information about creating profiles, see "Creating new profiles" on page 2-23.

Reading and writing a profile

To modify an existing profile, you must first read it into the edit buffer by using the Read command. For example:

```
admin> read log
LOG read
```

The profile that has been read into the edit buffer is the working profile. It remains the working profile until another profile is read into the buffer.

When a profile has an index, you must specify the index in the Read command, as in the following example:

```
admin> read connection tim
CONNECTION/tim read
```

If you issue a Read or New command that would overwrite the contents of the edit buffer when the buffer contains unsaved changes, the system displays a message prompting for confirmation. For example:

```
admin> read connection david
Reading will overwrite the changes you've made.
Read anyway? [y/n] y
CONNECTION/david read
```

You can avoid this prompt by appending the `-f` argument to the Read or New command.

The Write command writes the contents of the edit buffer to flash memory. For example:

```
admin> write
CONNECTION/tim written
```


The Write command does not clear the working profile out of the edit buffer. It simply saves any changes you have made. If you issue a Write command when the current profile has not been modified from the saved version, the write does not occur and the following message appears:

```
admin> write  
Nothing new to write; nothing written.
```

You can force the write to occur by appending the `-f` argument to the Write command. Note that the write always occurs if the profile has not been written previously.

Listing the working profile

The List command displays the contents of the working profile. For example:

```
admin> read user default  
USER/default read  
  
admin> list  
[in USER/default]  
name* = default  
password = ""  
active-enabled = yes  
allow-termserv = no  
allow-system = no  
allow-diagnostic = no  
allow-update = no  
allow-password = no  
allow-code = no  
idle-logout = 0  
prompt = *  
default-status = no  
top-status = general-info  
bottom-status = log-window  
left-status = connection-list  
screen-length = 24  
status-length = 18  
use-scroll-regions = no
```

For more information about profile contents, see “Changing contexts in the working profile” on page 2-18.

Parameter types and syntax

Table 2-3 shows parameter types with examples of correct syntax and descriptions of their use.

Table 2-3. Parameter types and syntax

Type	Syntax example	Description
Text	<code>station = test</code>	The maximum length of a text value varies. For some text values, the online help includes a list of valid characters. Some text values can be mixed case. Others (such as index fields) are converted to lowercase when set. When the value is allowed to contain spaces or quotations marks, it is displayed in quotation marks by the List or Get command. Password fields are displayed as asterisks unless the user has Allow-Password permissions.
Number	<code>dial-number = 1212</code>	The system always displays a numeric value as decimal, but you can enter the value in hex if you precede it with 0x, or in octal if you precede it with 0. In either case, use a zero, not the letter O.
Enumerated	<code>rip = routing-off</code>	Supports a limited set of values, all of which are displayed in the online help. You can specify the minimum matching string or the full value name.
Boolean	<code>private-route = yes</code>	An enumerated field with only two allowable values, which are shown in the online help. The values can be true/false or yes/no.
Hexadecimal	<code>mac-address = 00:c0:6c:4e:ac:5a</code>	Must be entered in hexadecimal notation (<i>nn:nn:nn:....nn</i>), where each <i>n</i> is a hexadecimal number from 0 to F.
IP address	<code>ip-address = 10.2.3.4/24</code>	An IP address is displayed and entered in dotted-decimal notation. A subnet mask is optional.
Complex	<code>mp-options = { 1 1 2 }</code>	A complex parameter can be a subprofile or an array value. (See “Changing contexts in the working profile” on page 2-18.)

Setting parameters in the working profile

To modify the parameters of the working profile, use the Set command. For example:

```
admin> read log
LOG read

admin> set host = 10.1.2.3

admin> set port = 500
```

Combining command-line shortcuts to set parameters

If you are not certain of the values supported for a parameter in the working profile, you can display online help and then use the displayed information to quickly set the parameter. Proceed as follows:

- 1 Use the Set command to display the supported values for the parameter. For example:

```
admin> set call-info ?
call-info:
  Specifies when call status changes are logged.
  Enumerated field, values:
    none: No call info will be displayed.
    end-of-call: Call info will be displayed at the end of the call.
```
- 2 Press the Up Arrow key or Ctrl-P to redisplay the Set command you just entered.

```
admin> set call-info ?
```

(For information about command history and using the Up Arrow key, see “Command-line shortcuts” on page 1-3.)
- 3 Press the Delete key to remove the question mark.

```
admin> set call-info
```
- 4 Type the appropriate value and then press Return. For example:

```
admin> set call-info = end
```

Similarly, suppose you are setting several parameters that have similar names and values. For example, consider the following two array values:

```
read-access-hosts 1 = 10.12.253.1
read-access-hosts 2 = 10.12.253.56
```

Proceed as follows:

- 1 Enter the first of the similar Set commands. For example:

```
admin> set read-access-hosts 1 = 10.12.253.1
```
- 2 Press the Up Arrow key or Ctrl-P to redisplay the Set command you just entered.

```
admin> set read-access-hosts 1 = 10.12.253.1
```
- 3 Press Delete and then enter 56:

```
admin> set read-access-hosts 1 = 10.12.253.56
```
- 4 Press the Back Arrow key or Ctrl-B to backspace to the 1, press Delete, and enter 2:

```
admin> set read-access-hosts 2 = 10.12.253.56
```
- 5 Press Return to execute the modified command.

Changing contexts in the working profile

In addition to parameters, a profile can also contain subprofiles, which themselves can contain subprofiles, creating several nested levels or *contexts* within the profile. In addition, some parameters have array values that reside in a separate context within the profile.

When you display a profile, a parameter that has a single value appears as follows:

```
parameter = value
```

A subprofile has multiple values enclosed in a single pair of braces:

```
subprofile = { value-1 value-2 value-3 value-4 value-5 value-6 }
```

If a parameter specifies multiple array values, they are enclosed in a single pair of brackets:

```
parameter = [ array-element-1 array-element-2 array-element-3 ]
```

To specify the value of a parameter or display its online help, you must either move to the context in which it resides, or specify the full path of that context on the Set command line.

Subprofiles

To display an example of profile contents that include subprofiles, read a Connection profile into the edit buffer and list its contents. For example:

```
admin> read connection tim
CONNECTION/tim read

admin> list
[in CONNECTION/tim]
station* = tim
active = no
encapsulation-protocol = mpp
called-number-type = national
dial-number = ""
sub-address = ""
clid = ""
ip-options = { yes yes 0.0.0.0/0 0.0.0.0/0 1 60 120 no no 0 0.0.0.0 +
ipx-options = { no router-peer both both no 00:00:00:00 00:00:00:00 +
bridging-options = { 0 no }
session-options = { "" "" no no 120 no-idle 120 "" 0 disabled +
telco-options = { ans-and-orig no off 1 no no 56k-clear 0 "" "" no no +
ppp-options = { no-ppp-auth none "" "" "" "" stac 1524 no 600 600 no +
mp-options = { 1 1 2 no no }
mpp-options = { "" quadratic transmit 1 1 15 5 10 70 }
fr-options = { "" pvc 16 "" transparent-link no "" 16 "" }
tcp-clear-options = { "" 0 "" 0 "" 0 "" 0 no "" 256 20 }
ara-options = { "" 0 }
v120-options = { 7 3 1500 30000 256 }
answer-options = { }
x75-options = { 7 10 1000 1024 }
appletalk-options = { no "" 0 0 router-peer }
usrRad-options = { global 0.0.0.0 1646 "" 1 acct-base-10 }
calledNumber = ""
```

```
dhcp-options = { no 1 4 }
shared-prof = no
framed-only = no
tunnel-options = { disabled atmp-protocol 0 rip-off "" "" 5150 "" "" +
vrouter = ""
atm-options = { aal5-llc 0 32 no "" none 1 { no { undefined "" { +
hdlc-nrm-options = { 2000 2 60000 5000 2 yes yes }
visa2-options = { 10000 04 06 15 05 03 00:03:00:00 }
sdtm-packets-server = no
AT-string = ""
port-redirect-options = { none 0 0.0.0.0 }
```

Listing a subprofile

To move to the context of a subprofile, append the subprofile's name to the List command. For example, with a Connection profile as the working profile, you could move to the IP-Options subprofile, as in the following:

```
admin> list ip-options
[in CONNECTION/tim:ip-options]
ip-routing-enabled = yes
vj-header-prediction = yes
assign-address = no
remote-address = 0.0.0.0/0
netmask-remote = 0.0.0.0
if-remote-address = 0.0.0.0
local-address = 0.0.0.0/0
netmask-local = 0.0.0.0
routing-metric = 1
down-metric = 7
preference = 60
down-preference = 120
private-route = no
multicast-allowed = no
address-pool = 0
auth-pool-address = 0.0.0.0
ip-direct = 0.0.0.0
rip = routing-off
route-filter = ""
source-ip-check = no
ospf-options = { no 0.0.0.0 normal 30 120 5 simple ***** 0 10 1000 +
multicast-rate-limit = 100
multicast-group-leave-delay = 0
client-dns-primary-addr = 0.0.0.0
client-dns-secondary-addr = 0.0.0.0
client-dns-addr-assign = yes
client-default-gateway = 0.0.0.0
tos-options = { no 000 normal incoming }
tos-filter = ""
client-wins-primary-addr = 0.0.0.0
client-wins-secondary-addr = 0.0.0.0
client-wins-addr-assign = yes
private-route-table = ""
private-route-profile-required = no
```

Working with Profiles

Changing contexts in the working profile

If a profile contains nested subprofiles, you can move directly to a subprofile at any nested level by specifying as many subprofile names as necessary on the List command line. For example:

```
admin> list ip-options ospf-options
[in CONNECTION/tim:ip-options:ospf-options]
active = no
area = 0.0.0.0
area-type = normal
hello-interval = 30
dead-interval = 120
priority = 5
authen-type = simple
auth-key = *****
key-id = 0
cost = 10
down-cost = 1000
ase-type = type-1
ase-tag = c0:00:00:00
transit-delay = 1
retransmit-interval = 5
non-multicast = no
network-type = Point-to-Point
poll-interval = 10
profile-type = wan
md5-auth-key = *****
```

Moving back up to the previous context

To move back up to the previous context, type a space and two periods after the List command, as in the following example:

```
admin> list ..
[in CONNECTION/tim:ip-options]
ip-routing-enabled = yes
vj-header-prediction = yes
assign-address = no
remote-address = 0.0.0.0/0
netmask-remote = 0.0.0.0
if-remote-address = 0.0.0.0
local-address = 0.0.0.0/0
netmask-local = 0.0.0.0
routing-metric = 1
down-metric = 7
preference = 60
down-preference = 120
private-route = no
multicast-allowed = no
address-pool = 0
auth-pool-address = 0.0.0.0
ip-direct = 0.0.0.0
rip = routing-off
route-filter = ""
```

```
source-ip-check = no
ospf-options = { no 0.0.0.0 normal 30 120 5 simple ***** 0 10 1000 +
multicast-rate-limit = 100
multicast-group-leave-delay = 0
client-dns-primary-addr = 0.0.0.0
client-dns-secondary-addr = 0.0.0.0
client-dns-addr-assign = yes
client-default-gateway = 0.0.0.0
tos-options = { no 000 normal incoming }
tos-filter = ""
client-wins-primary-addr = 0.0.0.0
client-wins-secondary-addr = 0.0.0.0
client-wins-addr-assign = yes
private-route-table = ""
private-route-profile-required = no
```

As in a file system, the `..` characters switch the context up one level. If you have moved several nested levels into a profile, you can move back up several levels at a time by specifying the `..` characters repeatedly in the List command line.

Setting parameters in a subprofile

You can set a parameter in a lower-context subprofile by specifying both the subprofile and parameter names in the Set command line. For example, you could set the Auth-Port parameter from the top level of the External-Auth profile as follows:

```
admin> set rad-auth-client auth-port = 514
```

Or, you could list the subprofile and then set parameters as usual. For example:

```
admin> list rad-auth-client
[in EXTERNAL-AUTH:rad-auth-client]
auth-server-1 = 0.0.0.0
auth-server-2 = 0.0.0.0
auth-server-3 = 0.0.0.0
auth-port = 0
auth-src-port = 0
auth-key = ""
auth-timeout = 0
auth-rsp-required = no
auth-sess-interval = 0
auth-ts-secure = yes
auth-reset-time = 0
auth-Send67 = yes
auth-frm-adr-start = no
auth-id-fail-return-busy = no
auth-id-timeout-return-busy = no
auth-radius-compatible = old-ascend
auth-keep-user-name = change-name
auth-realm-delimiters = "@/\%"
id-auth-prefix = ""
allow-auth-config-rqsts = yes

admin> set auth-port = 514
```

Parameters with array values

Parameters with array values behave similarly to subprofiles in that you can list and set them, and then return to your previous context in the profile. However, arrays are not nested.

Listing an array

To display an example of profile contents that include array values, list the contents of the Read-Access-Hosts array in the SNMP profile:

```
admin> list read-access-hosts
[in SNMP:read-access-hosts]
read-access-hosts[1] = 0.0.0.0
read-access-hosts[2] = 0.0.0.0
read-access-hosts[3] = 0.0.0.0
read-access-hosts[4] = 0.0.0.0
read-access-hosts[5] = 0.0.0.0
```

Moving back up to the previous context

To move back up to the previous context, type two periods after the List command:

```
admin> list ..
[in SNMP]
enabled = no
read-community = public
read-write-community = write
enforce-address-security = no
read-access-hosts = [ 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 ]
write-access-hosts = [ 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 ]
contact = ""
location = ""
```

Setting an array

You can set an array from a higher context by specifying both the parameter name and the array index in the Set command line. For example, you could specify Auth-Client addresses from the Rad-Auth-Server subprofile of the External-Auth profile as follows:

```
admin> list rad-auth-server
[in EXTERNAL-AUTH:rad-auth-server]
auth-port = 0
auth-session-key = no
auth-attribute-type = rad-serv-attr-any
auth-client = [ 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 +
auth-netmask = [ 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 +
auth-key = [ "" "" "" "" "" "" "" "" "" "" ]

admin> set auth-client 1 = 10.12.253.1
admin> set auth-client 2 = 10.12.253.56
```


Or, you could specify the addresses from the top level of the External-Auth profile, as in the following example:

```
admin> list ..
[in EXTERNAL-AUTH]
auth-type = None
acct-type = none
rad-id-space = unified
rad-id-source-unique = system-unique
rad-serv-enable = no
rad-auth-client = { 0.0.0.0 0.0.0.0 0.0.0.0 0 0 "" no 0 no no no 0 +
rad-acct-client = { 0.0.0.0 0.0.0.0 0.0.0.0 0 0 "" 0 0 acct-base-10 0 +
rad-auth-server = { 0 no rad-serv-attr-any [ 0.0.0.0 0.0.0.0 0.0.0.0 +
tac-auth-client = { 0.0.0.0 0.0.0.0 0.0.0.0 0 0 "" 0 }
tacplus-auth-client = { 0.0.0.0 0.0.0.0 0.0.0.0 0 0 "" 0 0 }
tacplus-acct-client = { 0.0.0.0 0.0.0.0 0.0.0.0 0 0 "" }
local-profiles-first = lpf-yes
noattr6-use-termsrv = yes

admin> set rad-auth-server auth-client 1 = 10.12.253.1
admin> set rad-auth-server auth-client 2 = 10.12.253.56
```

Or, you could list the array and then specify the array values by including an array index with each Set command. For example:

```
admin> list rad-auth-server auth-client
[in EXTERNAL-AUTH:rad-auth-server:auth-client]
auth-client[1] = 0.0.0.0
auth-client[2] = 0.0.0.0
auth-client[3] = 0.0.0.0
auth-client[4] = 0.0.0.0
auth-client[5] = 0.0.0.0
auth-client[6] = 0.0.0.0
auth-client[7] = 0.0.0.0
auth-client[8] = 0.0.0.0
auth-client[9] = 0.0.0.0

admin> set 1 = 10.12.253.1
admin> set 2 = 10.12.253.56
```

Creating new profiles

There are two ways to create a new profile:

- Use the New command to create a default instance of the profile type.
- Create a copy of a configured profile by specifying a new index value.

Using the New command

The New command uses the following syntax:

```
new profile-type [ profile-index ]
```

If you specify a valid index, it is applied to the new profile, which is read into the edit buffer. For example:

```
admin> new ethernet { 1 8 1 }
ETHERNET/{ shelf-1 slot-8 1 } read

admin> list
[in ETHERNET/{ shelf-1 slot-8 1 }]
interface-address* = { shelf-1 slot-8 1 }
ether-if-type = utp
filter-name = ""
enabled = yes
link-state-enabled = no
duplex-mode = full-duplex
```

If you do not specify an index for a profile that requires one, the system assigns the profile a default index. If you create a profile that requires a name for its index, and you do not specify any index at all, the system assigns the index a null value. For example:

```
admin> new connection
CONNECTION/" " read
```

If you create a profile that requires a physical or interface address for its index, and you do not specify any index at all, the system assigns the default index of any-shelf any-slot 0. For example:

```
admin> new ethernet
ETHERNET/{ any-shelf any-slot 0 } read
```

If you specify an invalid index, the system displays the messages that appear in the following examples:

```
admin> new ethernet { 12 2 3 }
error: bad index: unknown value "12"

admin> new ethernet foo
error: profile has no index
```

Depending on the profile type, the index chosen can affect the factory default values. For example, if you specify the index default for a User profile with non-default values, the factory default permission settings are changed:

```
admin> new user default
USER/default read
```

```
admin> list
[in USER/default (new)]
name* = default
password = ""
active-enabled = yes
allow-termserv = no
allow-system = no
allow-diagnostic = no
allow-update = no
allow-password = no
allow-code = no
idle-logout = 0
prompt = *
default-status = no
top-status = general-info
bottom-status = log-window
left-status = connection-list
screen-length = 24
status-length = 18
use-scroll-regions = no
log-display-level = none
```

If you specify the index admin, the profile's factory-default permissions are set as follows:

```
admin> new user admin
USER/admin read
(New profile differs from saved version with same index.)
admin> list
[in USER/admin (new)]
name* = admin
password = *****
active-enabled = yes
allow-termserv = yes
allow-system = yes
allow-diagnostic = yes
allow-update = yes
allow-password = no
allow-code = yes
idle-logout = 0
prompt = *
default-status = no
top-status = general-info
bottom-status = log-window
left-status = connection-list
screen-length = 24
status-length = 18
use-scroll-regions = no
log-display-level = error
```

Specifying a new index value for a configured profile

Another way to create new profiles is to read an existing profile into the edit buffer, modify its index and any other parameters as required, and then write the new profile. For example:

```
admin> read connection tim
CONNECTION/tim read

admin> set station = dave
(New index value; will save as new profile CONNECTION/dave.)

admin> set ip remote-address = 10.2.3.4/24

admin> write
CONNECTION/dave written
```

This method can be especially useful for configuring lines and ports. For example, if the ports on the Ethernet card all have a similar configuration, you can copy the parameter settings from one line to the next. For example:

```
admin> read ethernet {1 8 1}
ETHERNET/{ shelf-1 slot-8 1 } read

admin> list
[in ETHERNET/{ shelf-1 slot-8 1 }]
interface-address* = { shelf-1 slot-8 1 }
ether-if-type = utp
filter-name = ""
enabled = yes
link-state-enabled = no
bridging-enabled = no
duplex-mode = full-duplex

admin> set interface-address = { 1 8 2}
(New index value; will save as new profile ETHERNET/{ shelf-1 slot-8 2
}.)

admin> write
ETHERNET/{ shelf-1 slot-8 2} written

admin> set interface-address = { 1 8 3}
(New index value; will save as new profile ETHERNET/{ shelf-1 slot-8 3
}.)

admin> write
ETHERNET/{ shelf-1 slot-8 3} written
```

Displaying Status Information

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TAOS provides commands displaying information about the system and about specific slot cards. You can also display a status window, which shows connection, general, and log status.

Commands for displaying status information

Table 3-1 shows commands for accessing system status and log information.

Table 3-1. Commands for displaying status information

Command	Purpose
Fatal-History	Display the log of fatal errors that have occurred and the dates and times at which they occurred.
Debug	Toggle display of diagnostic messages on the screen in real time.
Userstat	Display user-session status.
Show	Show which slot cards are installed and in which slots, or show information about a specific card.
Status	Display or hide the status window.
Connection	Display connection status and interpret certain keystroke sequences to display additional connection status information.
Line	Display line status and interpret certain keystroke sequences to display additional line status information.
Log	Display event log information and interpret certain keystroke sequences to display additional log messages.
View	Specify which area of the status window should display a particular kind of status information. Or, redisplay general status information.

Some of the commands have options, which you specify by appending an argument to the command line. If you enter one of these commands with no arguments, the system displays a list of the available options.

Getting information about the system

Some TAOS commands display real-time information about system activities. Others report static information, such as the system software version. In addition, the TAOS unit maintains log buffers that record different levels of events. This section how to display different types of system information.

Checking the fatal error log

All fatal errors are logged to the fatal error log. To display the events logged there, enter the Fatal-History command. For example:

```
admin> fatal-history
SYSTEM IS UP:   Index: 100  Revision: 8.0  Slot 1/41 (apxsre)
                Date: 11/07/1999.      Time: 12:07:39
PRIMARY SELECTED: Index: 98  Revision: 8.0  Slot 1/41 (apxsre)
                Date: 11/07/1999.      Time: 12:07:52

OPERATOR RESET: Index: 99  Revision: 8.0  Slot 1/41 (apxsre)
                Date: 11/07/1999.      Time: 12:20:02
Reset from 172.31.1.254, user profile admin.

SYSTEM IS UP:   Index: 100  Revision: 8.0  Slot 1/41 (apxsre)
                Date: 11/07/1999.      Time: 12:22:06
PRIMARY SELECTED: Index: 98  Revision: 8.0  Slot 1/41 (apxsre)
                Date: 11/07/1999.      Time: 12:22:19
```

Each entry shows the system software version, the slot on which the error occurred, and the date and time at which the error occurred. To clear the log, enter the Clr-History command:

```
admin> clr-history
```

Toggling real-time log and debug message display

Each User profile contains a Log-Display-Level parameter, which specifies the level of messages to be displayed immediately in the interface (as well as written to a log buffer). The Admin User profile sets this level to `error` by default, which means that messages indicating an error condition should be displayed immediately.

The system can also generate debug messages. The debug messages are not sent to the log server, but are printed on the console and in all Telnet sessions currently established with the system. Thus, if an operator on one Telnet session or console enables debug output, debug information will be printed out on all Telnet sessions and on the console. To turn off unlogged diagnostic output, use the Debug command. For example:

```
admin> debug off
Diagnostic output disabled
```

To turn it back on:

```
admin> debug on
Diagnostic output enabled.
```

Displaying user-session status information

To show user-session status, enter the Userstat command with the -s argument:

```
admin> userstat -s
SessionID Line/Chan Slot:Item Tx/Rx Rate Svc Address Username
228687860 1.01.02/01 1:03:01/01 56K/56K MP 10.100.0.1 barney
228687861 1.02.03/02 1:04:02/00 28800/33600 MP 10.168.6.24 jake

<end user list> 2 active user(s)
```

The output includes the following information:

Field	Description
SessionID	The unique ID assigned to the session.
Line/Chan	The physical address (shelf.slot.line/channel) of the network port on which the connection was established.
Slot:Item	The shelf:slot:item/logical-item of the host port to which the call was routed.
Tx/Rx Rate	The transmit rate and receive rate. Note that for digital connections, the transmit rate is the same as the receive rate.
Svc	A code indicating the type of service in use for the session.

Getting information about slot cards

The Show command displays information about the status of installed slot cards. For example, on the APX 8000, the information shown in the following example appears:

```
admin> show
Controller { right-controller } ( PRIMARY ):
  { left-controller }          UP      ( SECONDARY )
  { shelf-1 slot-1 0 }        UP      ether3-card
  { shelf-1 slot-3 0 }        UP      8t1-card
  { shelf-1 slot-12 0 }       UP      hdlc2-card
  { shelf-1 slot-16 0 }       UP      csmx-card
  { shelf-1 slot-23 0 }       UP      csmx-card
  { shelf-1 slot-32 0 }       UP      hdlc2-card
  { shelf-1 slot-34 0 }       UP      4ether2-card
```

The status of a slot can be one of the following:

- UP—Normal operational mode.
- DOWN—Not in an operational mode.
- POST—The devices in the card are running power-on self tests.
- LOAD—The card is loading code as part of coming up.
- OCCUPIED—Slot 2 of a two-slot card.
- DIAG—The slot is being controlled by a remote debugger or is trying to execute a coredump as the result of a fatal error.
- NONE—The card has been removed, but its configuration remains in flash space.

To display additional information about a card, append the shelf and slot number to the Show command. For example, to display all installed expansion modules on shelf 1 of a MAX TNT or DSLTNT unit:

```
admin> show 1
{ shelf-1 slot-1 0 }      UP      8t1-card
{ shelf-1 slot-11 0 }     UP      48modem-56k-card
{ shelf-1 slot-12 }       OCCUPIED
{ shelf-1 slot-14 0 }     UP      48modem-card
{ shelf-1 slot-15 }       OCCUPIED
```

The output includes the address of each slot in which an expansion slot card is installed, the status of the card, and the type of card installed. The status can be one of the following:

- UP—Normal operational mode.
- DOWN—Not in an operational mode.
- POST—The devices in the card are running power-on self tests.
- BOOT—The card is running BOOT code. Under normal conditions, the LOAD status follows.
- LOAD—The card is loading code as part of coming up.
- RESET—The card is being reset.
- OCCUPIED—Slot 2 of a two-slot card.
- NONE—The card has been removed, but its configuration remains in flash space.

Working with the status window

The TAOS unit generates a continuous stream of statistics about its activities. You can specify in a User profile that these statistics should always be displayed when a user logs in with that profile. Or, you can simply display the status window on demand.

In a User profile, you can also specify which status information to display in each of the three areas of the status window. Figure 3-1 shows the default settings. To display the status window and control what information is contained in which part of the window, use Status, Connection, Line, Log, and View commands. (For descriptions, see Table 3-1 on page 3-1.)

Opening and closing the status window

The status window has three main areas:

- Left—the left side of the window
- Top—the upper-right side of the window
- Bottom—the lower-right side of the window

To redraw your current window to display the status window, enter the Status command:

```
admin> status
```

The system prompt moves to just below the status window. To close the status window, enter the command again:

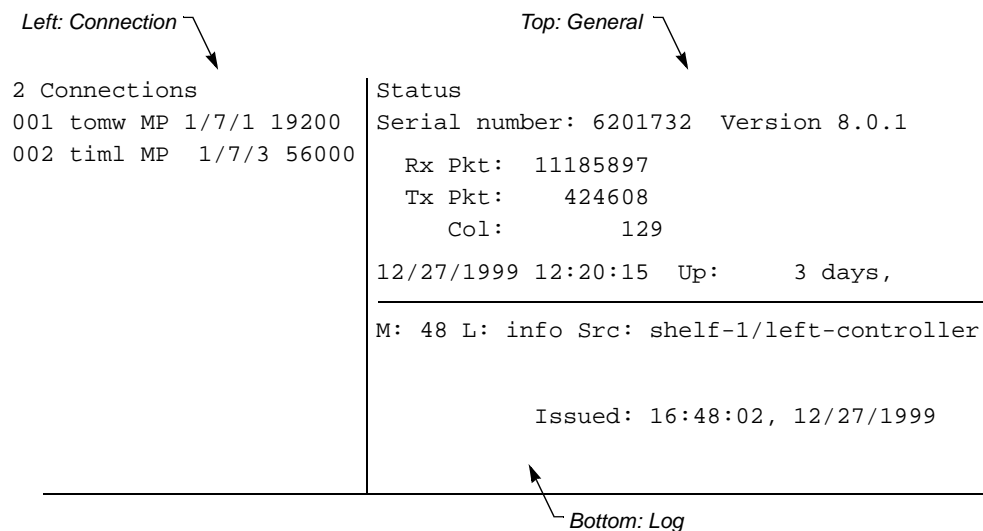
```
admin> status
```

If the system prompt is not visible below the status window, press Escape to display it.

Default contents of the window

Figure 3-1 shows an example of the default contents of the status window.

Figure 3-1. Information in the status window



The default contents are determined by the settings in a User profile. The profile for the user who displayed the status window shown in Figure 3-1 has the following settings:

```
left-status = connection-list
```

```
top-status = general-info
```

```
bottom-status = log-window
```

Connection-status information

With the default settings in a User profile, the left area of the status window initially displays connection information, as shown in Figure 3-1. One line appears for each active connection, showing the user or station name, type of connection, shelf/line/channel on which the call was placed or received, and the bandwidth or baud rate of the connection.

If the status window is not already displayed, the Connection command opens it with the connection-status information displayed:

```
admin> connection
```

In effect, this command puts the window in connection-status mode, with the following message displayed below the status window:

```
[Next/Last Conn: <dn/up arw>, Next/Last Page: <pg dn/up>, Exit: <esc>]
```

This message indicates the keystroke sequences you can use for displaying additional information in the connection-status area. The Down Arrow and Up Arrow keys display the next and previous connection, respectively, in the list of active connections. The Page Down and Page Up keys display the list a screen at a time.

When the connection-status-mode message is displayed, the system prompt does not appear at the bottom of the window. Press the Escape key to exit this mode and return to the system prompt.

General status information

With the default settings in a User profile, the top area of the status window initially displays general status information about the TAOS unit, including its serial number, the version of system software that is running, and the number of packets transmitted and received. This area also shows the current system date and time and how long the system has been up.

If the top of the status window is displaying another kind of information, you can redisplay the general status information with the View command:

```
admin> view top general
```

Log messages

With the default setting in a User profile, the bottom area of the status window initially displays the most recent message from the TAOS log buffer. The number of system event messages stored in the log is specified by the Save-Number parameter in the Log profile.

If the status window is not already displayed, the Log command opens it, with log-message information displayed in the bottom of the window.

Or, you can use the following command to specify that log messages appear in the top of the window, replacing the general status information:

```
admin> log top
```

In effect, these commands put the window in log mode, which causes the unit to display the following message below the status window:

```
[Back:<up arw>, Forward:<dn arw>, Start:<pg up>, End:<pg dn>, Exit:
<esc>]
```

This message indicates the key sequences you can use for displaying additional information in the log-message area. The Down Arrow and Up Arrow keys display the next and previous message in the buffer, respectively. The Page Up and Page Down keys display the first and last message in the buffer, respectively.

When the log-mode message is displayed, the system prompt does not appear at the bottom of the window. Press the Escape key to exit this mode and return to the system prompt.

Line information

To display information about WAN lines and channels, use the Line command. Because space is so limited for this graphical display of line- and channel-status information, the line-status window uses identifiers and codes. For example, the line's link status uses a two-character code such as LA (link active), RA (red alarm), YA (yellow alarm), and so forth. For complete information on line-status codes, see your product's reference manual.

If the status window is not already displayed, the following Line command opens it with line-status information displayed in the bottom (lower-right) of the window:

```
admin> line
```

Or, you can use the following command to specify that the line-status information appears in the top of the window, replacing the general status information:

```
admin> line top
```

You can display information about all lines installed in the system if you wish, but the default is to show information only about enabled lines. To display the status of all lines, enter the following command:

```
admin> line all
```

In effect, the Line commands put the window in line-status mode, which causes the unit to display the following message below the status window:

```
[Next/Last Line: <dn/up arw>, Next/Last Page: <pg dn/up>, Exit: <esc>]
```

This message indicates the key sequences you can use for displaying additional information in the line-status area. The Down Arrow and Up Arrow keys display the next and previous line, respectively, in the list. The Page Down and Page Up keys display the list a screen at a time.

When the line-status-mode message is displayed, the system prompt does not appear at the bottom of the window. Press the Escape key to exit this mode and return to the system prompt.

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